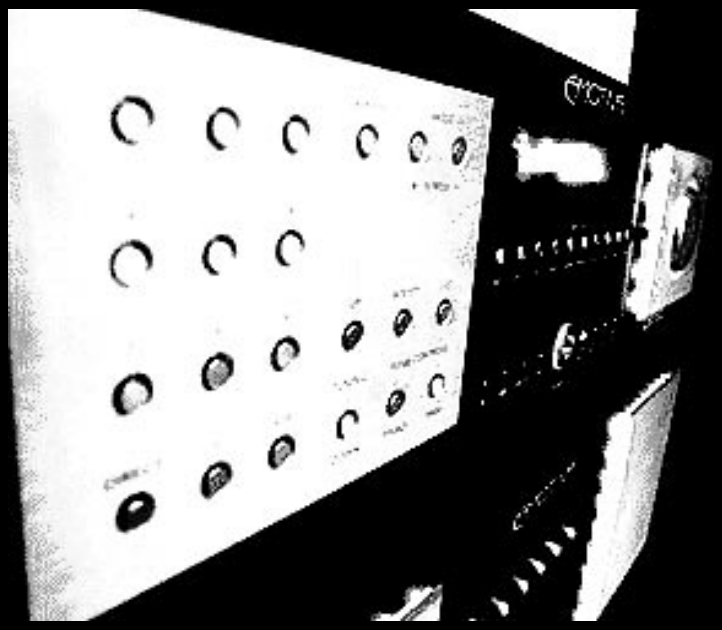
EMOTIVA



*WHERE PASSION .....*
*AND HOME THEATRE MERGE*

# MPS-1

PROFESSIONAL MULTI-CHANNEL AV AMPLIFIER

# *USER'S GUIDE*

# TABLE OF CONTENTS

# Safety Precautions

Read this Owner's Guide thoroughly before attempting to install and configure the Emotiva MPS-1 Modular Power Amplifier. All the safety and operation instructions should be read before any operation of the component(s) begin. After successful installation and configuration of the Emotiva MPS-1 Modular Power Amplifier, be sure to retain this manual in a safe place for any future reference needs.

All warnings on the Emotiva MPS-1 Amplifier and in these operating instructions should be followed. Safety is a key component to a long lasting and trouble free installation. The vast majority of the subsequent safety precautions involve simple common sense. If you are not comfortable with the installation of audio/video entertainment equipment, it will be to your benefit to seek the services of a qualified installation professional.

- *The Emotiva MPS-1 Amplifier should NEVER be used near water such as a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.*
- *The Emotiva MPS-1 Amplifier should be situated so that its location or installation position does not interfere with proper ventilation.*
- *The Emotiva MPS-1 Amplifier should not be situated on a bed, sofa, rug, or similar surface that may block any ventilation openings; or placed in a built-in installation such as a bookcase, cabinet, or closed equipment rack that may impede the flow of air through ventilation openings. If installed in a closed equipment rack for custom installations, be sure to add forced air ventilation so that it has adequate air circulation.*
- *The Emotiva MPS-1 Amplifier should be situated away from heat sources such as radiators, or any other devices which produce heat.*
- *The Emotiva MPS-1 Amplifier should be connected to a power supply only of the type described in this User's Guide and what is labeled on the MPS-1 component. Power supply cords should be routed so that they are not in high foot traffic areas or pinched by items placed upon or against them, paying particular attention to cords at the wall plugs, convenience receptacles, and the point where they connect into the MPS-1 Amplifier. The power cord of the MPS-1 Amplifier should be unplugged from the outlet when unused for a long period of time.*

When it's time for cleaning the Emotiva MPS-1 Amplifier, it should be cleaned only as recommended in this Owner's Guide. Never spray liquids directly into the component's vent openings. Care should be taken so that small objects do not fall into the inside of the MPS-1 Amplifier.

The following situations require your Emotiva MPS-1 Amplifier is serviced only by qualified service personnel:

*1. The power-supply cord or the plug has been damaged; or*

*2. Objects have fallen, or liquid has spilled into the component; or*

*3. The MPS-1 has been exposed to rain; or*

*4. The MPS-1 does not appear to operate normally or exhibits a marked change in performance; or*

*5. The MPS-1 has been dropped, or its enclosure or chassis is damaged.*

The user should not attempt to service the MPS-1 Modular Power Amplifier beyond the means described in this Owner's Guide. All other servicing should be referred to qualified service personnel.

**To prevent electric shock,** do not use this polarized plug with an extension cord, receptacle or other outlet unless the blades can be fully inserted to prevent blade exposure.

*Pour preevenir les chocs electriques ne pas utiliser cette fiche polarises avec un prolongateur, un prise de courant ou une autre sortie de courant, sauf si les lames peuvent titre inserees a fond sans laisser aucune parllle a decouvert.*

**Grounding or Polarization —** Precautions should be taken so that the grounding or polarization means of the component is not defeated.

This apparatus does not exceed the Class A/Class B (whichever is applicable) limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of the Canadian Department of Communications.

*ATTENTION — Le present appareil numerique n'emet pas de bruits radioelectriques depassant las limites applicables aux appareils numeriques de class A/de class B (selon le cas) prescrites dans le reglement sur le brouillage radioelectrique edicts par les ministere des communications du Canada.*

For questions regarding service, please contact:

**Emotiva**
**106 Mission Court, Suite 101**
**Franklin, TN 37067**
**Tel - (615) 771-1224** **(877) EMO-TECH**
**Fax - (615) 771-1128** **www.emotiva.com**

If you purchased your MPS-1 from AV123, please contact them directly for service or technical questions. They can be reached at (877) 543-7500 or support@av123.com.

**WARNING –** TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

**CAUTION:** TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT, FULLY INSERT.

**ATTENTION:** POUR EVITER LES CHOCS ELECTRIQUES, INTRODUIRE LA LAME LA PLUS LARGE DE LA FICHE DANS LA BORNE CORRESPONDANTE DE LA PRISE ET POUSSER JUSQU'AU FOND.

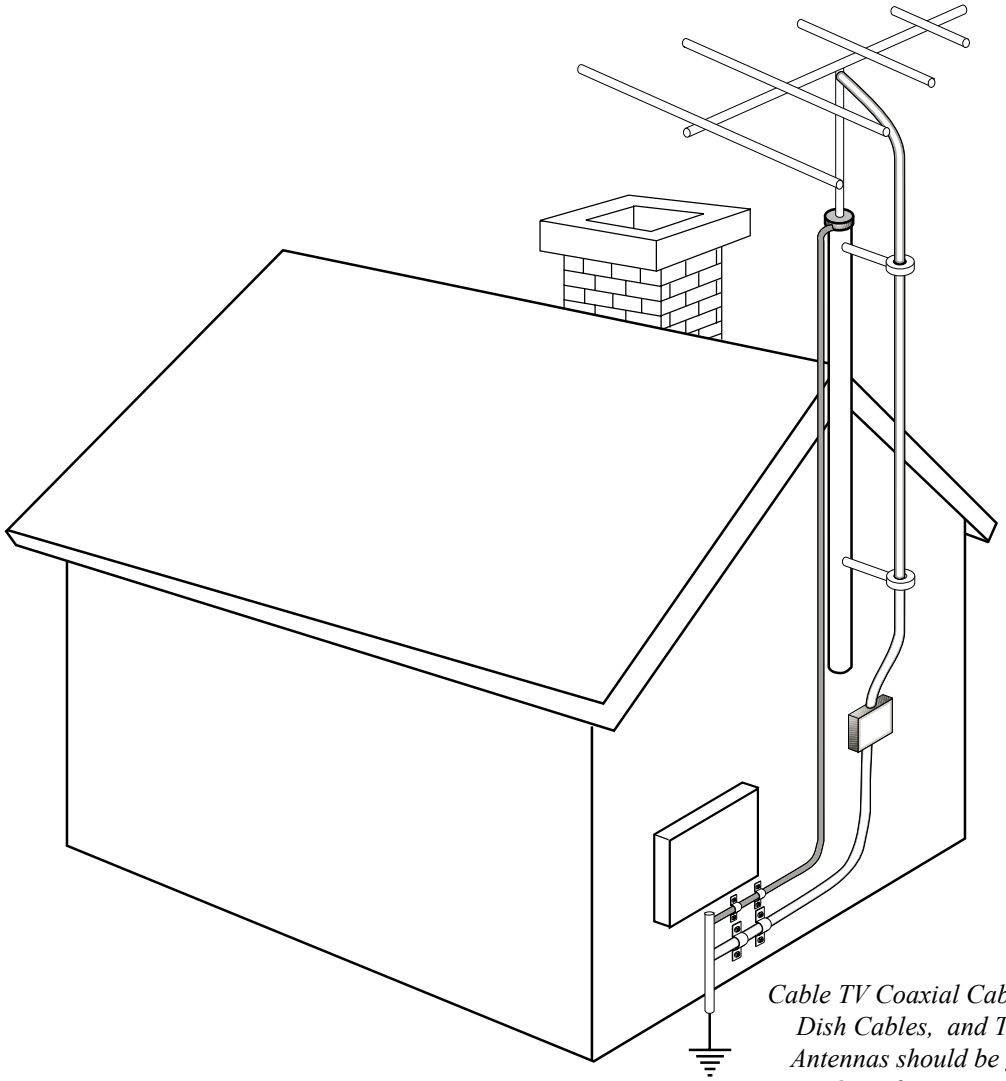
# NEC (National Electrical Code) Standards

## A Note for the Cable Television (CATV) Installer

This reminder is to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and in particular, specifies that the cable ground shall be connected to the grounding system of the building as close to the point of cable entry as practical.

## Antenna Grounding Outside the House

If an outside antenna is connected to the receiver, be sure the antenna system is grounded so as to provide some protection against voltage surges and built-up static charges. Article 810 of the National Electrical Code, ANSI/NFPA 70, provides information with regard to proper grounding of the lead-in wire to an antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode. See diagram below.



*Cable TV Coaxial Cable, Satellite Dish Cables, and Television Antennas should be grounded BEFORE the point of entry into the house.*

# Thank You for your MPS-1 Purchase

Dear Home Entertainment Enthusiast,


Thank you for purchasing the Emotiva MPS-1 Modular Power Amplifier. We sincerely believe that it offers you outstanding performance and value. Emotiva products are engineered and produced with the highest quality materials and incorporate the latest technology. We think you will find the Emotiva MPS-1 meets or exceeds your expectations.

The Emotiva MPS-1 is a flexible, high perfornmance amplifer. It has been designed for maxmum performance, ease of use, and installation flexibility. By employing cutting edge technology, the Emotiva MPS-1 easily power to your speakers at high power levels, at the same time remaining as efficient as possible, regardless of volume levels. This allows you to fully enjoy audio and video sources without concern for dynamic headroom during complex musical passages and high level effects. What's more, the Emotiva MPS-1 does it all with exceptionally refined cosmetics and a sound quality that will satisfy even the most discriminating tastes.

The Emotiva MPS-1 features an array of leading edge technologies and all the features necessary to perform the functions expected of a high end Modular Power Amplifier.

The Emotiva MPS-1 Modular Power Amplifier is a rock solid component that allows you to control and manage all of your system's speakers with 7 individual ampliifers in a single, easy-to-use amplifier chassis. This makes installation of your home entertainment system much easier than connecting multiple mono or two channel amplifiers. At Emotiva, we remember that creating home audio/video products means that they should be easy to use while delivering unparalleled performance.

# Unpacking the MPS-1

The Emotiva MPS-1 Modular Power Amplifier should reach you in flawless condition. If you notice any shipping damage or other issues upon unpacking the unit, please contact your Emotiva Retailer immediately.

Gently lift out the unit and remove all the packing material and accessories. It is important to save all the packing materials and the box in case your Emotiva MPS-1 ever needs to be moved or shipped back to the factory for service.

Make sure that you keep your sales receipt. It is the only way for Emotiva to establish the duration of your Limited Warranty and it may come in useful for insurance purposes. Please take a moment to fill out and mail the Emotiva Customer Response card.

## Recording the Serial Number

Please read the serial number located on the rear panel and record it below. Also record the place where you purchased this product and the date of purchase.

**Model Number** MPS-1

**Serial Number** _____

**Place of Purchase** _____

_____

_____

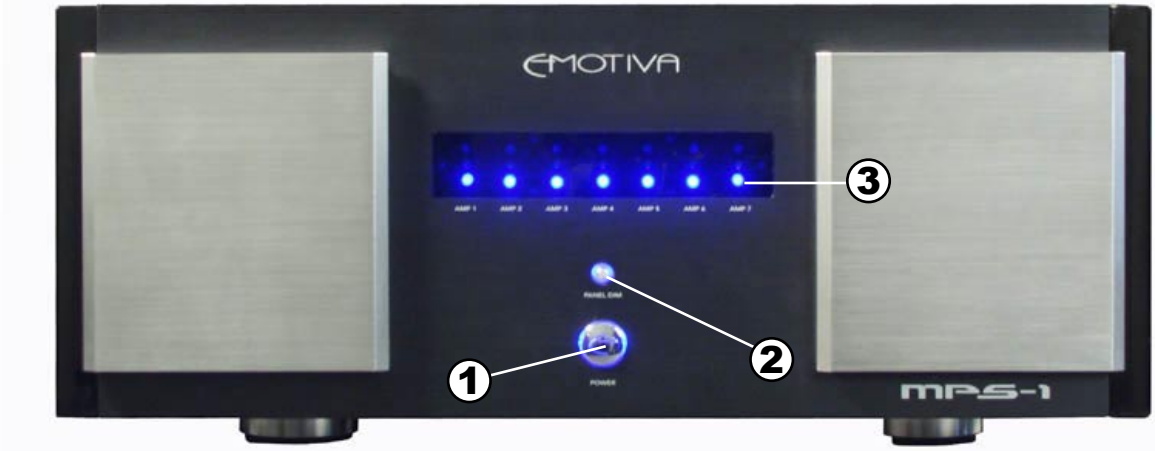
**Date of Purchase** _____

# Emotiva MPS-1 Modular Power Amplifier

## Modular Professional Power Amplifier Features

- *Audiophile quality, modular power amplifier*
- *True card cage design can accommodate up to seven independent 200 watt mono block power modules - power modules glide in and out on Nylon rails*
- *Power modules feature independent 350VA, low noise toroid power transformers w/ high speed rectifiers and 48,000uF of storage per channel for a 336,000uF total, across seven independent channels*
- *High efficiency Class H power amplifier design, minimizes power losses and allows cool and efficient operation*
- *Complementary, discrete power amplifier design incorporating high current, high speed, Toshiba power devices*
- *200 Watts x 7 into 8 Ohms (using seven EPM-300 Power Modules)*
- *300 Watts x 7 into 4 Ohms (using seven EPM-300 Power Modules)*
- *400 Watts x 7 into 2 Ohms (using seven EPM-300 Power Modules)*
- *Power modules are completely stable into 2 ohm loads*
- *Truly transparent, integrated soft clip circuitry*
- *Balanced XLR and RCA inputs*
- *Silent turn on/off - No audible transients*
- *THD less than .015%, 20Hz-20kHz with 80kHz measurement bandwidth*
- *DC offset, less than 1mv, servo controlled.*
- *Crosstalk between ANY channels – greater than 120dB*
- *All aluminum capacitors are premium quality, low ESR, 105°C rated for high reliability and performance*
- *Doubled sided, plate through, glass epoxy, FR4 PCB's used throughout with 2 ounce poured copper on all power sections and ground planes*
- *Individual channel status indicators for standby, operate, and fault behind tinted acrylic panel*
- *Fully protected from all fault conditions with ultra quiet, module mounted, fan assisted cooling for severe duty cycle applications*
- *Soft start circuitry*
- *Signal sensing auto turn-on or remote 12 VDC trigger. Soft touch power switch*
- *Modules are designed for field replacement with the removal of four screws*
- *Black lacquered, piano finished wood side panels are included, as are milled aluminum rack ears for professional installations*
- *Massive, multi element milled aluminum faceplate with "floating" wing detail – indirect, cobalt blue panel illumination with panel dimmer*
- *IEC power inlet, 120/230 VAC user configurable*

# MPS-1 Front Panel Features




## ① Power Button

This turns the main power to the MPS-1 on or off. It is a main power button, but it is not required to turn this on and off each time the MPS-1 is used. When enabled, the AUTO ON/OFF MODE will automatically switch the amplifier on when an audio signal comes from a source or control unit (such as a preamplifier). The TRIGGER MODE will turn the amplifier on when an external source (such as a preamplifier) provides a 5-24 VDC input on the trigger terminals.

## ② Panel Dim Selector Button

This button selects the overall brightness of the lighting on the front panel of the MPS-1. The button has four steps, each consecutively after the other. The four levels of brightness are:

- *High*
- *Medium*
- *Low*
- *OFF*

Pressing the PANEL DIM button repeatedly will scroll through each level of brightness.

## ③ Amplifier Channel Display

This multi-color LED display behind a tinted acrylic panel shows activity of any of the seven power modules on the MPS-1 doing amplification duties.

**BLUE LIGHT**: Power Module is installed, on and ready.

**AMBER LIGHT** (middle row): Power module is installed and powered on but is in a standby situation waiting for audio signal or exernal trigger.

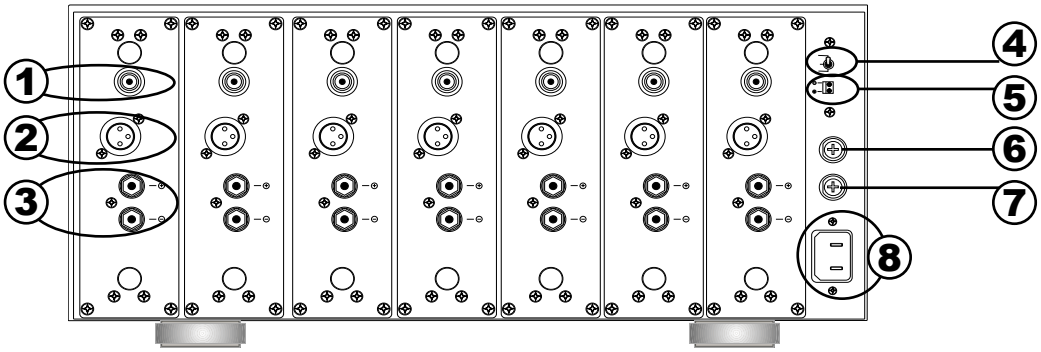
**RED LIGHT**: This indicates a fault condition. A fault condition is one or more of the follwing:

- *Excessive Operating Temp*
- *Excessive Current (Short Circuit)*
- *DC on the Outputs*

See the "Troubleshooting Section" for more details on the display.

*Note - When there is **NO LIGHT** - The power module is not installed, the power module's fuse is blown, or connection between the power module and the chassis is misaligned.*

# MPS-1 Finished Rear Panel Layout




***Note: Before connecting any components to the MPS-1, the individual power modules must first be installed into the chassis. Please see pages 15-17 for details on the power module installation.***

## ① Unbalanced RCA Inputs

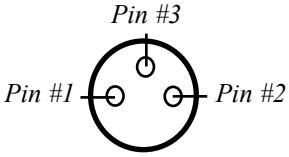
The MPS-1 has one unbalanced RCA input available for each amplifier channel module. Connect this to the corresponding RCA jack on your preamplifier to provide signal to the amplifier channel. See page 21 for a connection diagram.

## ② Balanced XLR Inputs

The MPS-1 has one balanced XLR input available for each amplifier channel module. Connect this to the corresponding XLR jack on your preamplifier to provide signal to the amplifier channel. If you have a choice, use the balanced XLR connections whenever possible. Balanced connections offer superior noise immunity over unbalanced RCA connections.

On the balanced XLR connector, the wiring is as follows:

*Pin #1 = Ground*
*Pin #2 = Signal +*
*Pin #3 = Signal -*




See page 22 for a connection diagram.

## ③ Speaker Output Terminals

The speaker output terminals for each amplifier channel are located just below the balanced XLR input jack. The top post of each binding post pair is the positive output, and connects to the positive (red) post of your speaker. The bottom post of each pair is the negative, and connects to the negative (black) post of your speaker. The posts can accept bare wire, spade terminals, and dual or single banana connectors.

Spade connections or banana plugs ensure a simple, solid fit in the terminal whereas bare wire may be awkward when the terminal is screwed down to compress the wire into place. Keep in mind that if you use "dual banana" plugs and "stack" them, you will be creating a parallel connection. For more details on series and parallel connections, see pages 24-25.

### ④ Turn On Selector Switch

This switch allows you to select how the amplifier will turn on and off.

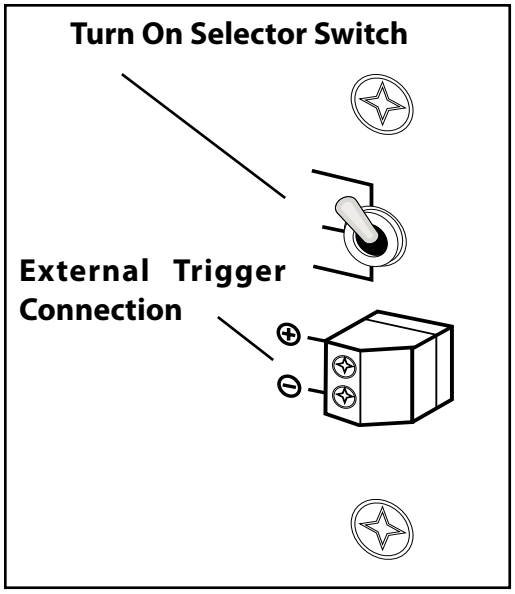
In the **ON** (Up) position, the switch on the front of the amplifier is the method you will use to power up and power down the amplifier. Please note that in this configuration, you must manually power up and power down the amplifier each time you use it or it will have unnecessary standby current draw.

In the **SIGNAL** (Middle) position, the amplifier automatically turns on whenever it senses an audio signal on any one of the seven amplifier channels. The circuit stays active for a full minute after the absence of any audio signal to account for quiet passages of music or dialogue.

In the **TRIGGER** (Down) position, the amplifier's ON and OFF functions are controlled by a trigger from a source or preamplifier device. The trigger accepts 12 VDC and will turn the amplifier on whenever a trigger is present (See #5). When there is no trigger, the amplifier goes into standby mode. This is the preferred method for activating the MPS-1.

### ⑤ External Trigger Connection

This external trigger connection allows the amplifier to be turned ON and OFF by a control device such as a source unit or preamplifier. It can also be used with most home automation controllers. The trigger requires a 12 VDC trigger. This is the preferred method of activating the MPS-1. See page 23 for connection details.




### ⑥ Fuse #1

This fuse is for the power supply of the MPS-1 chassis. It is a TL15AL type rated a 15A, 250 V. If the fuse ever fails, be sure to replace it with the same type and rated fuse.

### ⑦ Fuse #2

This fuse is also for the power supply of the MPS-1 chassis. It is a TL15AL type rated a 15A, 250 V. If the fuse ever fails, be sure to replace it with the same type and rated fuse.

### ⑧ IEC Line Cord Socket

The MPS-1 comes with a detachable line cord which connects here. Plug the line cord into an AC wall socket which is correctly configured with the voltage and current supply specified for the MPS-1. Do not plug this line cord into a power strip, it must plug directly into a wall socket. For more details on AC power considerations, see page 19.

# Installation and Connections

Observe the following precautions when choosing a location for your Emotiva MPS-1:

*1) Protect it from prolonged exposure to direct sunlight and other direct sources of heat, such as heating vents and radiators.*

*2) Do not expose the unit to rain or moisture. If fluid or a foreign object should enter the unit, immediately turn off the power and contact your Emotiva Dealer.*

*3) Avoid excessive exposure to extreme cold or dust.*

*4) Do not place heavy objects on top of the unit.*

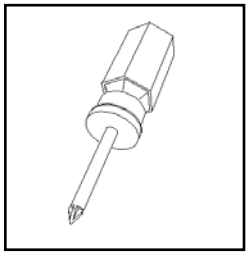
*5) If you need to clean the front surface, first turn off the power and then use a soft dry cloth, rubbing with the grain. Be careful not to scratch the display window.*

## Installation of the EPM-300 Power Modules

The MPS-1 is shipped without the EPM-300 power modules installed so that the packaging is not subject to unnecessary shipping damage. The modules must be installed prior to use, however this is a straight forward task and is very simple.

### Tools Required

You will need a #2 Phillips screwdriver to complete this task. Once the installation of the modules are complete, you may also need wire cutters and strippers to prepare the trigger plug and speaker wires for connection to the MPS-1.



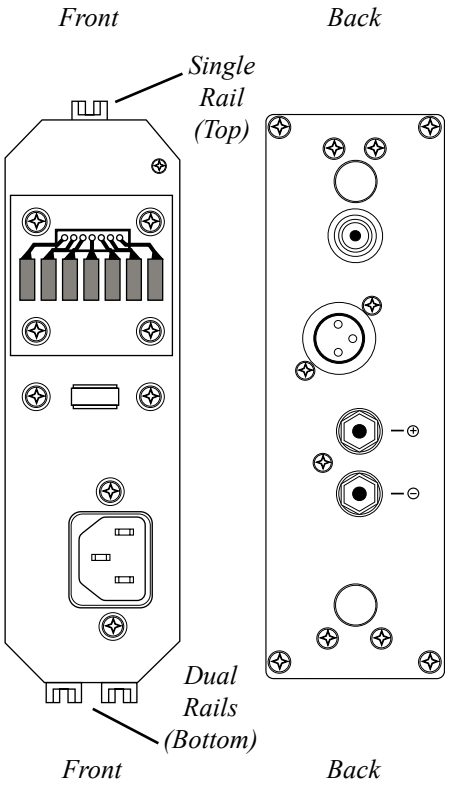
### Unpacking the EPM-300 Module

You should have received your MPS-1 in a total of three boxes. The main MPS-1 chassis is in one of the boxes. The other boxes contain the EPM-300 power modules, one box with five modules and the other box with two modules. All of the installation accessories are packaged with the MPS-1 chassis.

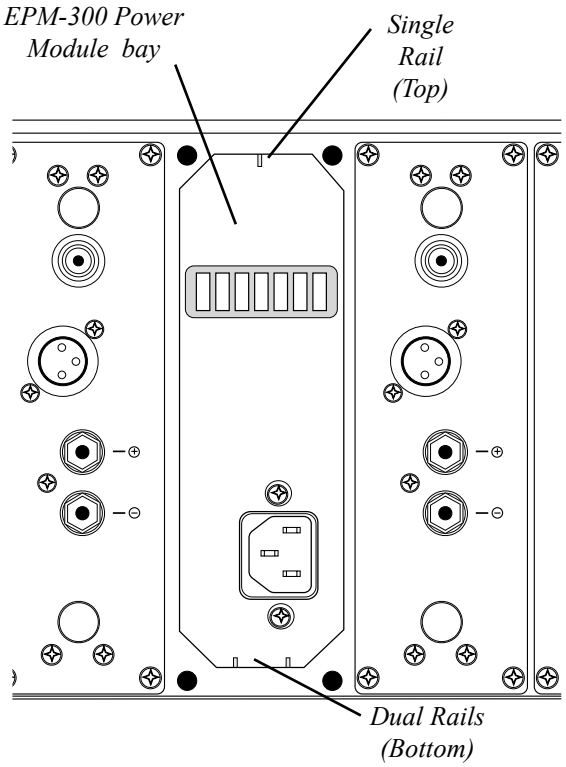
Unpack each EPM-300 module one at a time, install the module per instructions, then proceed with the next one. Avoid touching any of the circuitry or the cooling fan as you handle the EPM-300 module.

## Orienting the Module to the MPS-1 Chassis

Upon removing the EPM-300 power module from the packaging, you must orient which is the "top" and "bottom" as well as which is the "front" and "back". The top has a single nylon rail while the bottom has two nylon rails. It is important that the module be placed in so that the rails on the top and bottom align with the corresponding "rail channels" in the MPS-1 chassis. The front of the module that will be inserted into the chassis has an AC receptacle and a small printed circuit board while the back of the module is where you will find the RCA/XLR connectors and speaker outputs.




*EPM-300 Power Module orientation*

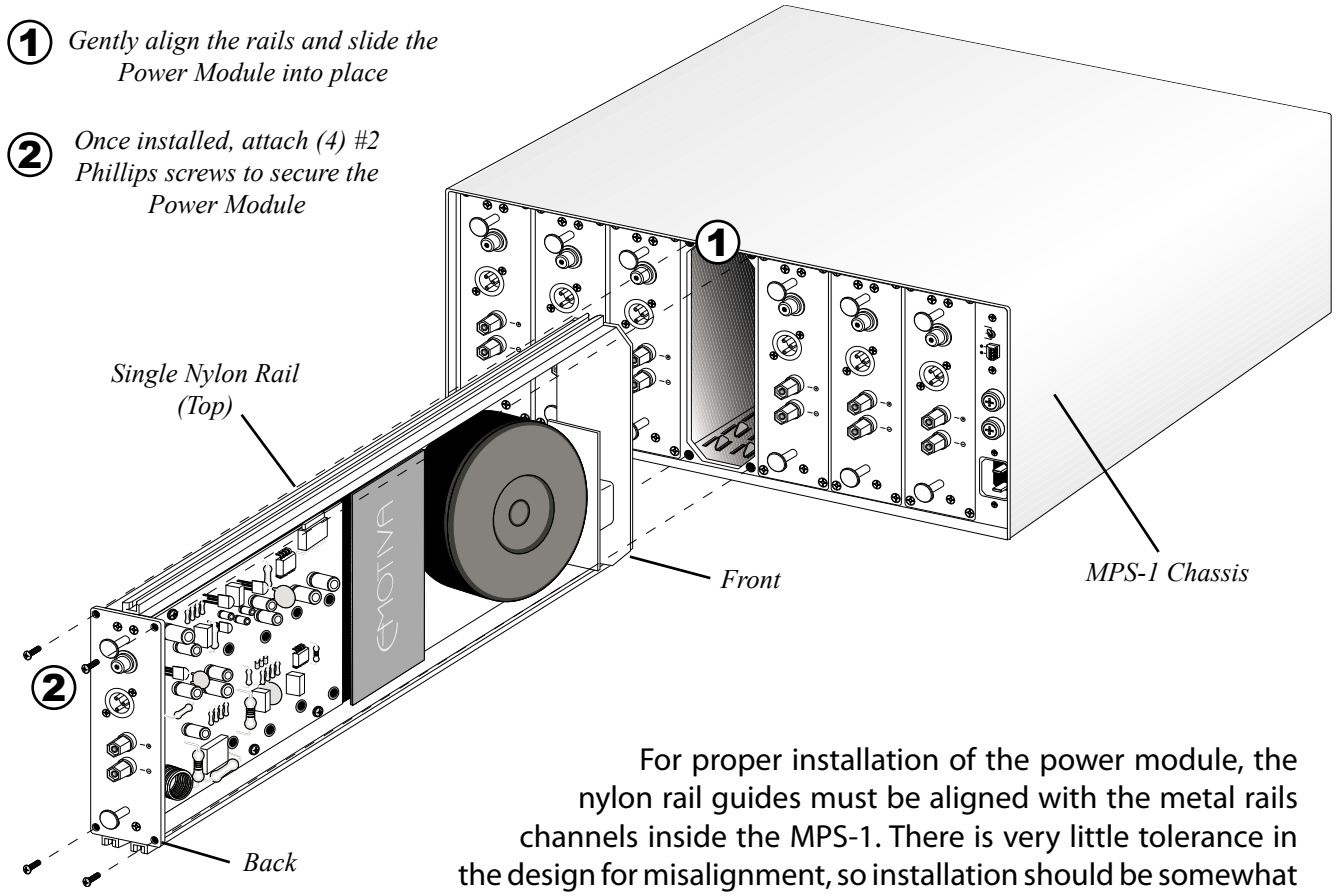



*The back of the MPS-1 chassis looking "in" where the EPM-300 module will be installed. (For clarity, the EPM-300 modules are shown installed on either side of the empty opening)*

Before inserting the power module, confirm that the 115/230 VAC voltage setting is correct for the country in which you are installing the MPS-1. These should be set correctly (by default) at the factory at the time of testing and packaging.

## Inserting the EPM-300 Module

***CAUTION:* Make sure the MPS-1 chassis is NOT CONNECTED to line voltage during the installation of the power modules!**




For proper installation of the power module, the nylon rail guides must be aligned with the metal rails channels inside the MPS-1. There is very little tolerance in the design for misalignment, so installation should be somewhat easy if you have the module configured correctly. Begin to insert the power module into the MPS-1 chassis. Insertion of the power module is smooth and easy and it will not require any excessive force. If you must force the power module in, stop and re-evaluate your alignment of the nylon guide rails. Excessively forcing the power module can damage it. Use care not to damage the fan or electronic components during this installation. The power module is fully inserted when it bottoms out in the back of the MPS-1 chassis.

## Completing the EPM-300 Installation

Once the power module is inserted, you must attach it to the MPS-1 chassis with four #2 phillips screws (provided). The screw holes on the back panel should line up to threaded holes in the MPS-1 chassis. Install and tighten the screws, then proceed with the installation of subsequent power modules.

Once the installation of all power modules is completed, use the supplied CHANNEL I.D. decals to identify each power module for easy channel identification.

# MPS-1 Installation Accessories

The MPS-1 Modular Power Amplifier comes with some additional installation accessories that make the component fit into virtually any installation theme.

### Piano Black Wood Side Panels

The MPS-1 comes with attractive wood side panels in a stunning piano black lacquer finish. As this electronic component is going to be in many homes alongside equally nice furniture, the side panels allow the MPS-1 to look a little more like it belongs in the room. Although every installation will not require them, they are included for the owner to use if he/she so chooses.

To clean the piano black finish, simply use a damp cloth (dampened with water) and wipe them down. Then use a soft dry cloth to dry and buff the finish to its original shine. Do not use any chemicals on the side panels. Chemical cleaners may cloud the finish of the laquer.

### Rack Mount Installation Hardware

In the event the user chooses to mount the MPS-1 in a "rack mount" configuration, the unit has rack mount ears included. To install the MPS-1 into a rack mounting configuration, the following details must be completed.

1) The piano black wood side panels must be removed, This is accomplished by simply removing the four #2 Phillips screws on each panel.
2) The four aluminum feet of the MPS-1 chassis must also be removed. This is accomplished by removing one #2 Phillips screw directly in the center of the foot
3) Remove two #2 Phillips screws attached at the front edge of the side panel.
4) Attach the rack mount ears to the side panels using the longer #2 Phillips screws provided.
5) When installing into a rack mounting position, be sure to provide adequate support from the sides and/or rear of the unit to avoid any unnecessary stress on the chassis.
*6) Be sure the MPS-1 has adequate ventilation. At least 1 empty rack space above AND below the chassis will allow fresh air to circulate around the unit.*

# AC Power Considerations

Ensure that the unit is plugged into an outlet capable of supplying the correct voltage and current specified for your model. Remember to account for the electrical power that other components will require if they share a common wall socket or electrical circuit. The majority of household electrical sockets in places other than the kitchen and garage are 15 amperes maximum. Most DVD players and other source components are fairly low current items. When all seven of the power modules are installed, the Emotiva MPS-1 requires a minimum of 15 amperes @ 120 volts or 8 amperes @ 230 volts. It should be sufficient to allow the other devices such as preamplifiers and A/V source units to share a wall socket, but power amplifiers such as the MPS-1 and a video display (big screen TV or video projector) should be provided a SEPARATE electrical connection on a SEPARATE circuit. As the MPS-1 has a minimum requirement that consumes one entire circuit, please use a second (separate) electrical connection for other devices. DO NOT plug the MPS-1 into a power strip or extension cord unless the device is specifically designed and rated for high current use.

Refer to your preamplifier, A/V source component(s), and video display owner's manuals to learn the power requirements so you can safely plan your electrical power requirements for your home entertainment system.

# Input Connection Considerations

The MPS-1 contains both unbalanced RCA inputs and balanced XLR inputs. You must choose one or the other for each channel connected. You cannot use XLR cables in, with RCA out, or RCA in with XLR out. There is no direct internal connection between the RCA and XLR inputs.

Whenever possible, keep preamp level audio cables away from electrical power cords by at least a few inches. It's more important with amplifiers as the AC power cords are carrying much more current than other source and preamplifier components, which means there is a larger degree of noise or "hum" potential with the amplifier power cord proximity.

# Output Connection Considerations

The output connectors provided on each channel of the MPS-1 are standard "binding post" speaker connectors with industry standard spacing. These are sometimes called 5-way binding posts because of the many ways in which the speaker wire can connect into the posts. The posts can accept bare wire, spade terminals, and dual or single banana connectors. Spade connections or banana plugs ensure a simple, solid fit in the terminal whereas bare wire may be awkward when the terminal is screwed down to compress the wire into place. Keep in mind that if you use "dual banana" plugs and "stack" them, you will be creating a parallel connection. For more details on series and parallel connections, see pages 24-25.

It is important to observe polarity so that the speaker wire connects to the red and black terminals on the amplifer and the corresponding terminals at the speaker. Also make sure that the positive speaker wires do not touch the negative speaker wires, or any chassis metal. This will cause a short circuit and activate the protection circuitry.

## Automatic Operation of the Cooling Fan(s)

Each power module in the MPS-1 is equipped with a cooling fan to maintain a safe operating temperature. During normal operation the fan is off. The fan only becomes operational when it is required to cool the power module at temperatures in excess of 50 degrees Celsius (122 degrees Fahrenheit). The speed of the fan will increase as the temperature increases. The fan will turn off when the power module cools to 30 degrees Celsius (86 degrees Fahrenheit).

## Connection Tips for Superior Sound

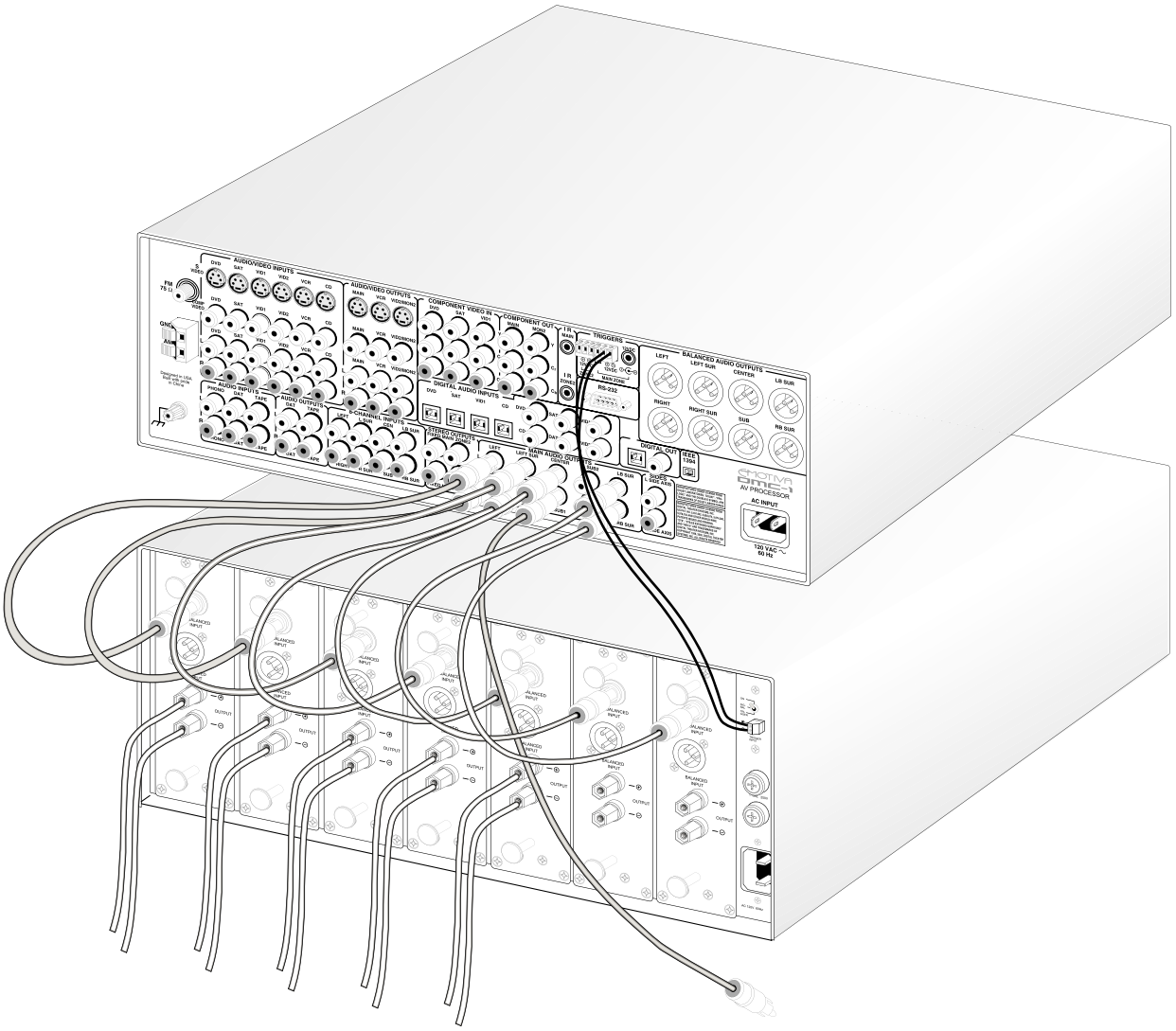
Before setting up your new system, please consider the following:

- Always make sure the MPS-1 is turned off before making or changing ANY connections.
- Whenever possible, route the power cords away from the signal cables or speaker wires to prevent any hum or interference heard in the speakers.
- Many RCA type patch cords can be a very tight fit and there is usually a preferred method of getting them off. Some have to be removed with a twisting action. Be gentle or you may damage the jacks of your MPS-1, the cables themselves, or other components.
- Many audiophile signal cables are intended to be hooked up in one direction. If this is the case the cables will be marked with arrows the direction of signal flow.
- It is usual for the right channel RCA patch cord plugs to be red and the left channel connections to be white, grey, or black (depending on the cable brand). RCA connectors that are gold will be designated with a colored band to designate the channel.
- If the preamplifier to which you will connect the MPS-1 features balanced XLR outputs, use the MPS-1's balanced XLR inputs instead of RCA type patch cords. Balanced signal transmission between audio components provides superior rejection of hum and noise, especially if long cables are required.

# Connection Diagrams

## Unbalanced Connections

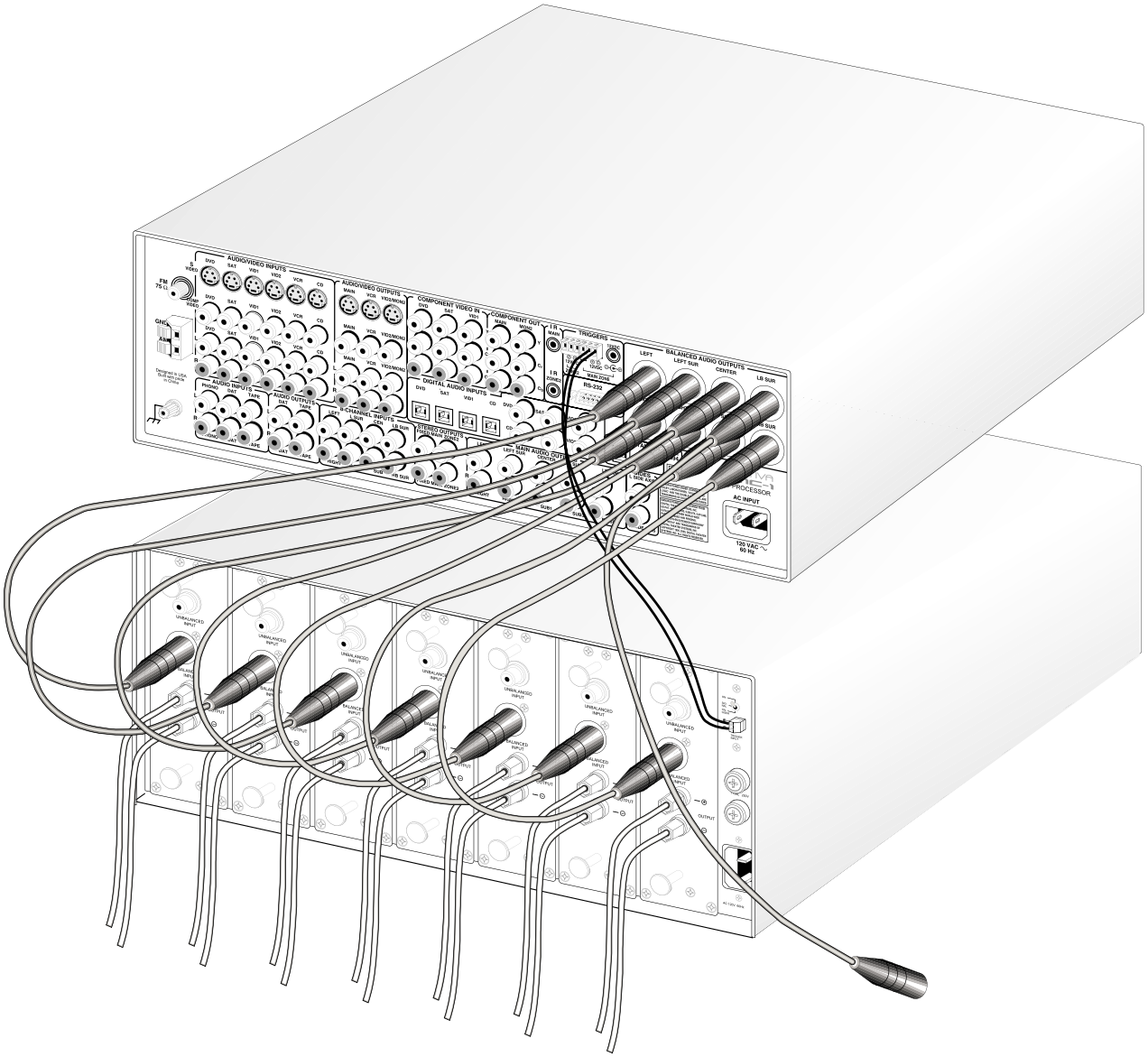
If your preamplifier has RCA outputs, it can be connected to the amplifier inputs as shown. The amplifier will boost the preamplifier's output, up to a level suitable for driving speakers.



Make sure that the positive speaker wires do not touch the negative speaker wires, or any chassis metal. This will cause a short circuit and may activate the protection circuitry. The 12 VDC trigger connection shown can be used to turn the amplifier on when the preamplifier turns on. This is the preferred method of activating the MPS-1. Alternatively, you could use the amplifier's SIGNAL switch position. The amplifier will then automatically turn on when a preamp audio signal is received.

## Balanced Connections

If your preamplifier has balanced XLR outputs, it can be connected to the amplifier inputs as shown. The amplifier will boost the preamplifier's output, up to a level suitable for driving speakers. The overwhelming advantage of using the balanced XLR inputs is that there is superior noise rejection over the common RCA type connections.



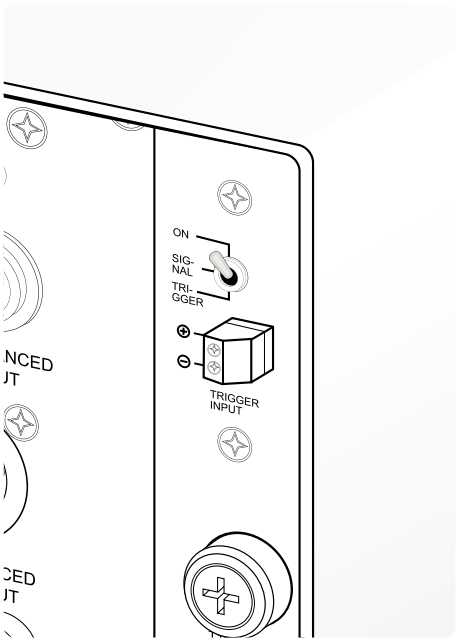
Make sure that the positive speaker wires do not touch the negative speaker wires, or any chassis metal. This will cause a short circuit and may activate the protection circuitry. The 12 VDC trigger connection shown can be used to turn the amplifier on when the preamplifier turns on. This is the preferred method of activating the MPS-1. Alternatively, you could use the amplifier's SIGNAL switch position. The amplifier will then automatically turn on when a preamp audio signal is received.

## 12V Trigger Connections

The 12 VDC trigger connection shown can be used to turn the amplifier on when the preamplifier turns on. This trigger will actually trigger with any switched DC Voltage from 5-24 VDC, however the majority of home theater components use a standard 12 VDC trigger connection for this function. This is the preferred connection as it has the greatest degree of reliability.

**Never switch anything that plugs directly into the wall with this trigger connection. This action will damage the unit and VOID THE WARRANTY.**

If unable to use the trigger connection to activate the MPS-1, you could alternatively use the amplifier's SIGNAL switch position. The amplifier will then automatically turn on when a preamp audio signal is received.

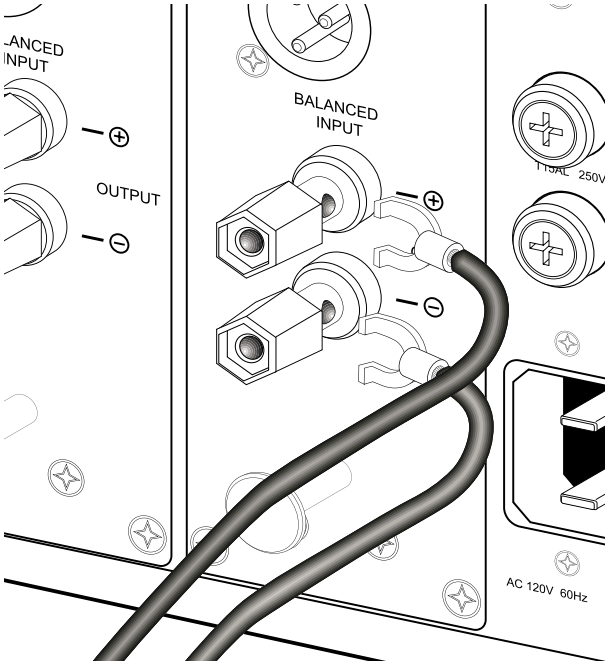



*The trigger connection plug and turn-on selector switch are located on the top right corner of the back of the MPS-1 chassis*

## Speaker Output Connections

The speaker output terminals for each amplifier channel are located just below the balanced XLR input jack. The top post of each binding post pair is the positive output, and connects to the positive (red) post of your speaker. The bottom post of each pair is the negative, and connects to the negative (black) post of your speaker.

Regardless of the configuration used for the MPS-1 amplifier channels, proper connection of each speaker is essential. The 5-way binding posts can accept bare wire, spade terminals, and dual or single banana connectors. Spade connections or banana plugs ensure a simple, solid fit in the terminal whereas bare wire may be awkward when the terminal is screwed down to compress the wire into place. Keep in mind that if you use "dual banana" plugs and "stack" them, you will be creating a parallel connection.




*Spade connections ensure a tidy and safe connection to each speaker output binding post.*

# Series and Parallel Speaker Connections

Whenever connecting more than one speaker per channel to an amplifier (regardless of the brand), you must consider the way in which the amplifier will be impacted by adding the additional speaker(s). Additionally, speakers with dual voice coils also apply to this consideration. Two voice coils in a single speaker also cause different reactions from an amplifier depending on the way in which they connect to the amplifier.

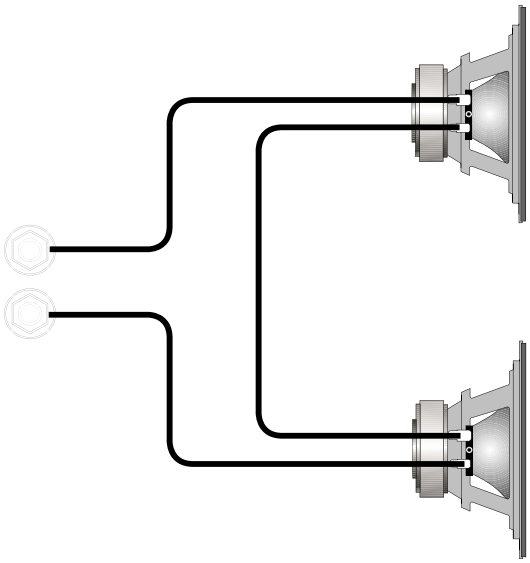
The connection of more than one speaker per channel will tend to degrade the speaker's frequency response and may make the amplifier run hot. For the best sonic results, use one speaker per amplifier channel. If you must connect more than one speaker per channel, there are two methods in which to do so: Series or Parallel.

### Series

A **series** connection is established when voice coils are connected in a string – end to end – so there's only *one* way for audio signals to flow "in" and only one way for audio signals to flow "out". For example, if you were to series-connect two speakers to the front right channel of the amplifier:

- *The positive output terminal of the right channel connects to the positive input post of the first speaker.*
- *The negative input post of the first speaker connects to the positive input post of the second speaker.*
- *The negative input post of the second speaker connects to the negative output terminal of the right channel.*

The total impedance of speakers in series is found by adding their impedances together. For example, two four ohm speakers in series is an eight ohm load. Series connections are easier on the amplifier than parallel connections as the total impedance is higher than driving a single speaker.



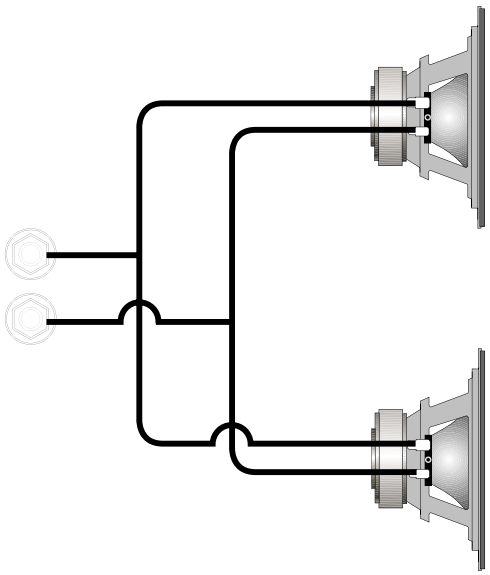
*An example of a SERIES connection between two speakers*

## Parallel

A **parallel** circuit is established when voice coils are connected in a way that there are multiple paths for audio signals to flow "in" and multiple paths for audio signals to flow "out". When speakers are connected in parallel, the total resistance at the amplifier is proportionally divided based on the value of each individual voice coil resistance. The term "divided" simply means all of the values together in parallel are a SMALLER value than each all by itself. For example, if you were to parallel-connect two speakers to the front right channel of the amplifier:

• *The positive output terminal of the right channel connects to the positive input post of the first speaker* ***and*** *to the positive post of the second speaker.*

• *The negative output terminal of the right channel connects to the negative input post of the first speaker* ***and*** *to the negative post of the second speaker.*



*An example of a PARALLEL connection between two speakers*

The total impedance of equal speakers in parallel is found by dividing the impedance of one speaker by the number of speakers. For example, two eight ohm speakers in parallel is a four ohm load (eight ohms divided by two), four eight ohm speakers in parallel is a two ohm load (eight ohms divided by four).

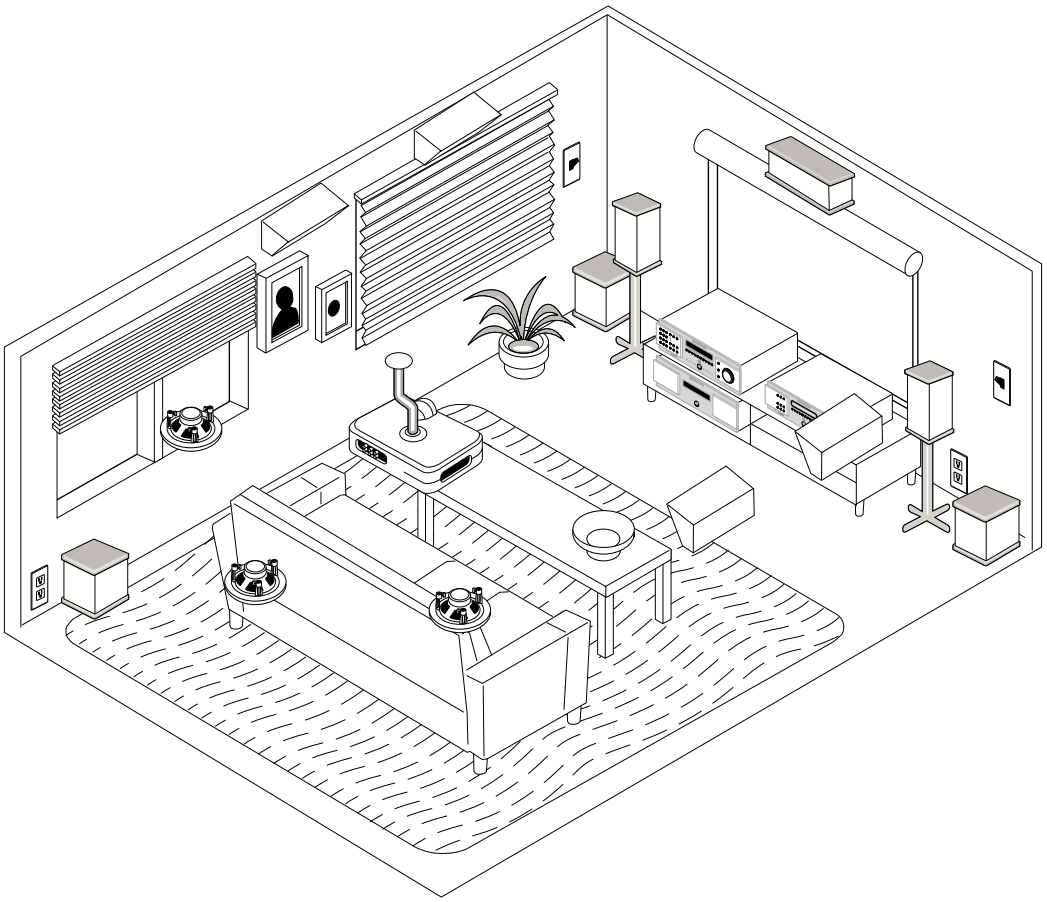
Parallel connections are harder on the amplifier than series connections, as the total impedance is lower compared to driving a single speaker, and the amplifier must produce more current to drive them.

Ideally, the total average impedance should be no less than 2 ohms per channel. You must make sure that the lower impedance does not cause the amplifier to overheat, shut down, blow the line fuse, or pop your circuit breaker. If this happens, you should reduce the number of speakers wired in parallel, rewire them in series, or use more than one power amplifier.

## Technical Note about Multiple Speaker Connections

Although there are two possible connection types discussed in this manual, it is imperative that with either connection type that you use loudspeakers of the same type and nominal impedance for these connections. In doing so, you have the most predictable outcome for your installation. When speakers of different nominal impedances and/or different bandwidths are used, there are many other acoustic problems that come into play in addition to complex impedance at the amplifier's speaker output terminals. If you must use multiple speakers on any individual amplifier channel, please use speakers as close to identical as possible.

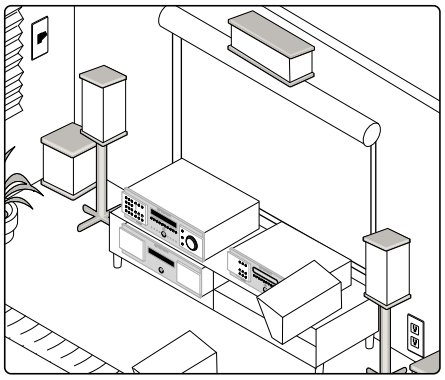
# Speaker Placement Tips



## Tips Before You Begin

Read this section thoroughly. There are a number of ways in which it may seem aesthetically pleasing to place speakers in a room that will ultimately result in a sound quality compromise. The placement of speakers is equally as important as the room itself. While there may be very little you can do about the room where your home theater is installed, you can choose placement of speakers within that room to maximize the sound quality of the system. Ultimately, this will give a much better result when you are enjoying your home theater and your new Emotiva MPS-1.

Overall, the best placement for front speakers is where the sound is directed at ear level. This means that the speakers themselves can be in positions lower (like small floor standing speakers) or higher (like in-wall or in-ceiling speakers) as long as the sound is "pointed" toward the listeners and preferably around ear level. This is not necessarily the case with the rear speakers or the side axis speakers. Read each of the sections carefully for the most appropriate positioning. A subwoofer is also a little challenging to install depending on the room. In multiple subwoofer installations, the positioning of the woofers to the listener as well as to each other is critical because there can be problems with cancellation if optimum placement is not observed.



*Place LEFT, CENTER, and RIGHT main speakers at equal distances from the listening position.*

### The Front Speakers

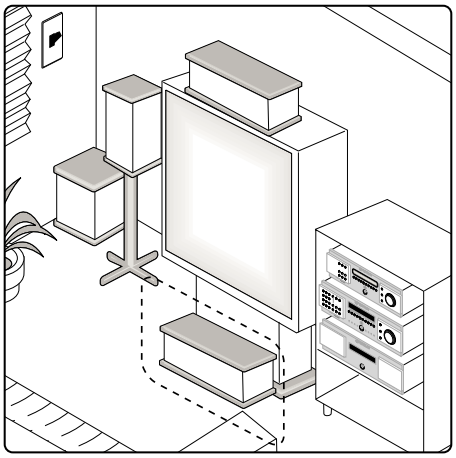
You should closely follow the placement recommendations of your speaker manufacturer, with the addition of the following points:

*• The left and right front speakers should be positioned so that your TV is exactly centered between them. This will help focus your attention towards the screen.*

*• For the best overall imaging, the left speaker should be set exactly the same distance and angle away from your listening position as the right speaker. It is recommended that you use a tape measure to set them up to be the same distance away, within about half an inch tolerance.*

If you have a smaller TV, the speakers should be no more than two feet away from the sides of the TV. If possible, have the center, left and right speakers at the same height (within two feet). This will help give a smooth transition when sound effects move from speaker to speaker.

Ideally, the speakers should be no closer than two feet from the rear and side walls, in order to reduce any reflections that might upset the imaging. If your speakers are closer than this, you can experiment by adding sound deadening material such as drapes on the walls to reduce any unwanted reflections.



*Whenever possible, place the center speaker no more than 12" (25.4cm) above or below the front speakers*

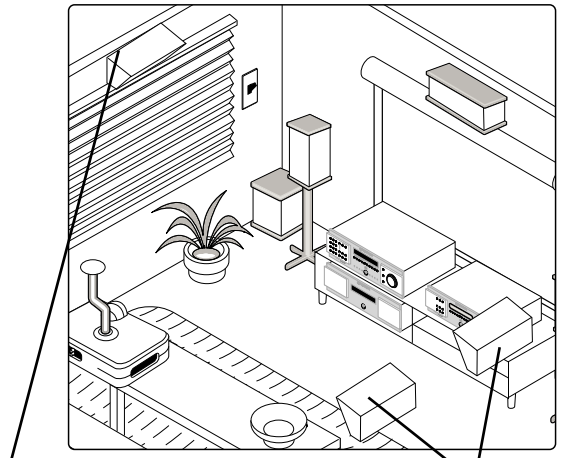
### The Center Speaker

Most movie dialog will come from the center speaker, so careful positioning is an important part of a good home theater system. Your eyes and ears should focus your attention towards the center of the screen.

The center speaker can sit on top, or directly underneath the TV, as long as it is located on the centerline and not off to one side. Ideally you would try to maintain a deviation from the center line of the speakers of less than 12". This means the center speaker will not be lower or higher than 12" to the center measurement of the LEFT and RIGHT MAIN speaker center measurements.

Position the front face of the speaker close to the front edge of the TV cabinet. (The sound waves may otherwise reflect off the top of the TV cabinet and distort the center imaging).

In some systems, two center speakers are used; one on either side of the TV. As they are in mono, the result is a sound image that is positioned exactly at the screen center.

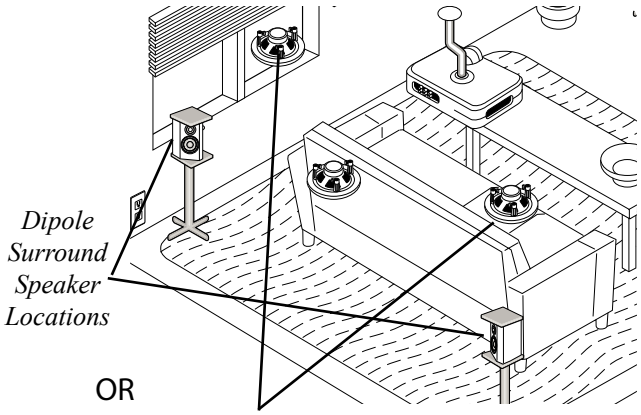


*Potential Side Axis Speaker Locations*

## Side-Axis Speakers

Some preamplifier processors feature side-axis channels which are matrixed and derived from the left and right front channels, so they are available in stereo as well as surround modes. If available as a feature, the processor should have a set-up menu to turn the SIDE-AXIS channels ON or OFF.

In the diagram to the left, typical placement of side-axis speakers is depicted by the speakers that appear to be "suspended" where walls are in the room. Another appears above the window on the left side of the drawing. Wherever you position them, place these speakers along the side walls, close to the fronts. You can also angle them in towards your listening position for better results. You should not use a surround or effect speaker (such as a dipole) for side axis speakers. Direct radiating speakers will give the best result without interfering with the clarity and presence of the main speakers in the front left, center, and right sides.



*Dipole Surround Speaker Locations*

OR

*In-Ceiling Surround Speaker Locations*

## The Surround Speakers

Place each surround speaker to be an equal distance away from your central listening position and keep them at least one or two feet above ear level.

The diagram to the left shows the use of dipole surround speakers. These are usually positioned to the side of your listening position. They radiate forwards and backwards and have a quiet null zone (the "apex" of the triangular shape) which should point towards the listener. The overall effect is that you cannot hear the direct sound from the surround speakers because they don't directly radiate into the listening space. Most manufacturers of dipole speakers intended for use as an effects or surround speaker have excellent details on optimum positioning for the best overall results based on the application.

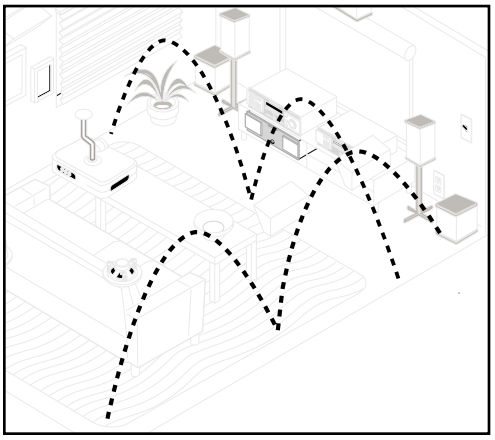
Conventional surround speakers can be placed behind the listener, on the rear walls or the side walls or in the ceiling (as the diagram indicates). Adjust the angle so they do not point directly at the listener but cause reflections from the sidewalls, floor, or the ceiling. Avoiding direct aim at the listening positions will give the effect of broadening the rear soundstage so that you cannot distinguish the sound as coming from a small box on the wall but from a larger area behind you.

## Surround Back Speakers

Many preamplifier processors feature additional outputs for surround back speakers. These create a wonderful sense of realism in surround effects during playback of Dolby Digital EX, Dolby Pro Logic IIx, and DTS ES.

Ideally, all the surround speakers should be of the same make and model as the surround speakers, and fitted at similar heights to produce a smooth continuous sound field.

## Subwoofer Location



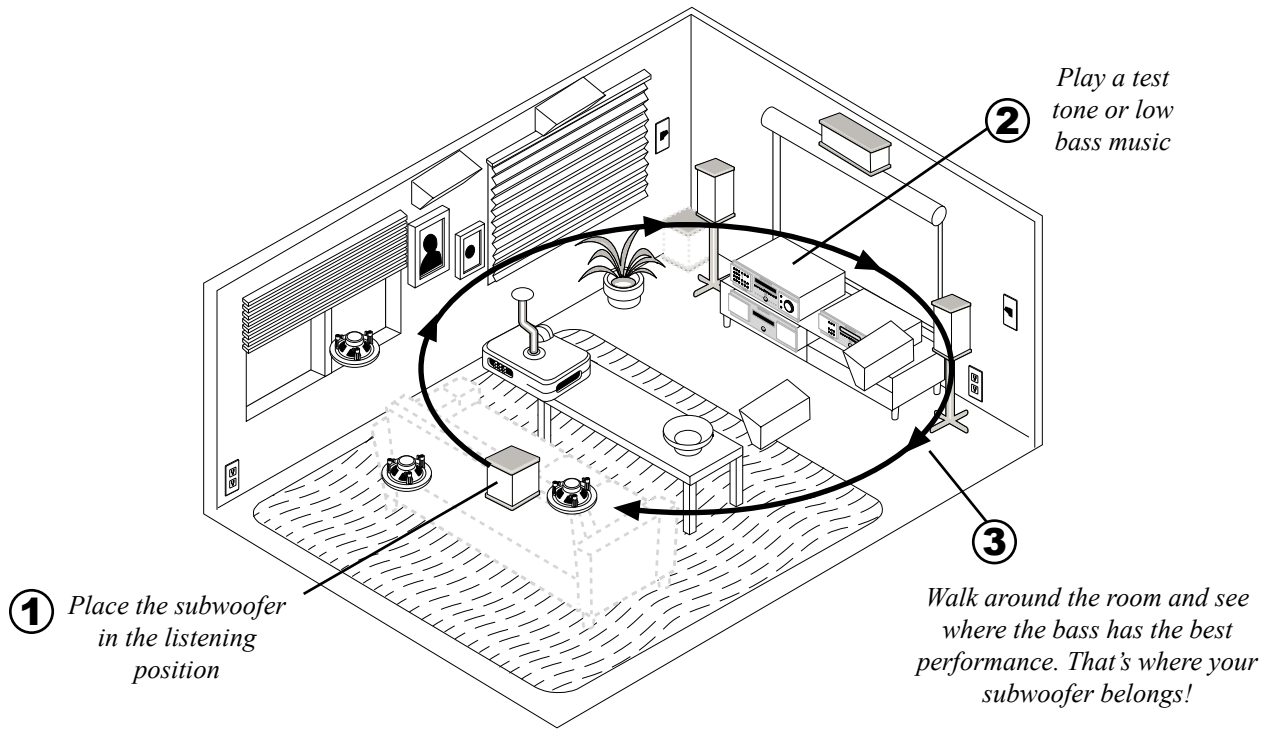
*Standing waves depicted in a room. "Peaks" are good, "Dips" are bad.*

Although subwoofers are normally configured with their own internal power amplifier (rather than using the MPS-1), we know you will probably use at least one subwoofer in your home entertainment system. As such, it's important to understand correct subwoofer placement so that you get the most out of the other speakers connected to the MPS-1 Modular Power Amplifier.

A subwoofer typically sounds best in a corner with at least 5 feet of wall to either side. Due to the short wavelengths of high-frequency sounds, they don't interact strongly with the size and shape of a room. Lower frequencies long wavelengths that can cause "Standing wave" problems. Placing the subwoofer in a corner usually creates the best possible situation for the sound to interact with the room, allowing even distribution of the bass frequencies. Often the corner that offers nearby placement to the front speakers may yield the best results, but you should try several locations before settling on just one.

The best location for a single subwoofer can be found by playing a couple of different low frequency test tones (or some music with heavy sustained bass passages) and proceeding with the following easy 1-2-3 process:

1. *Place the subwoofer right on the seat of your couch or listening chair.*
2. *You can then either run the calibration (noise) signal through it, or simply plug the analog outputs of a CD player directly into your subwoofer's low-level inputs. Turn down the subwoofer's volume level before turning on the CD, then play the test tones or some music with heavy sustained bass passages.*
3. *Walk around the room, standing in all the positions where you might be able to place the subwoofer. Again, this is usually near the corners of the room. Try locations fairly close to the front speakers.*




Notice where in the room the bass output from the subwoofer sounds the loudest. Shut things down and install the subwoofer there. This is the best position for the subwoofer. The bass will sound the best when you are sitting in your normal listening position.

If your subwoofer seems to sound best when it is near the front speakers (often the case), keep in mind that most television sets may not react well to the subwoofer if it is not built specifically for use in a home theater application. While most front Left/Center/Right speakers do have shielding when intended for use in a home theater application, subwoofers are not always magnetically shielded and may damage the television if placed too close. If you want to check if this will be a problem, select an unused video input on the television to bring up a single color screen. If you see any color distortion anywhere on the screen, an unshielded speaker is too close to the screen and should be moved away from the television until the color distortion disappears.

*Note - most powered home subwoofers feature a phase control with a range between 0-180 degrees. This is present so that in situations where the optimum location is not particularly desirable, you can locate the subwoofer elsewhere nearby and make a slight adjustment to the phase so that is sound arrives to the listener at the same time as the other speakers. Ideally, sound arriving at the same time is what allows the subwoofer to create the illusion of the main speakers making the bass. This is what enhances the listening experience.*

# Troubleshooting Guide

The Emotiva MPS-1 is expertly designed and built to provide years of trouble-free performance. Most problems that occur can usually be solved by checking your setup or making sure that the audio and video components connected to the amplifier are on and fully operational.

The following information will help you deal with common setup problems you may experience during normal use of your unit. If problems persist, contact your Emotiva Dealer for help.

### No Sound (from one or more speakers connected to the MPS-1)

- *Speaker cables may have come undone. Turn off your system and check the cables, and tighten the amplifier and speaker binding posts.*
- *Damaged audio cable.*
- *The preamplifier volume level is low for the channels concerned. Recheck the preamplifier calibration procedure.*
- *A preamplifier Mute switch may be on, or an external processor loop or a tape monitor loop is engaged.*
- *Check that your preamplifier or source is running the correct surround sound mode. Maybe it is set for 2-channel stereo when you were expecting 5.1 surround sound.*
- *Check in case any missing channels have been turned off in a preamplifier setup menu. For example, the center amplifier channel will not receive a signal if the preamplifier has been set to "Phantom."*
- *The Auto/on/off switch on the MPS-1 might be in the off position.*
- *A fuse on the unit may have blown or the individual fuse within the power module may have blown.*

### The amplifier shuts down often or the line fuse(s) blows often

- *Check that the positive and negative speaker wires are not shorted together.*
- *Make sure that no speakers are shorted internally. If you have an ohm-meter, disconnect the speaker wires and measure the resistance between the speaker's positive and negative terminals. If the reading is less than 2 ohms, the speakers may have an internal short. Measure all speakers and check their impedance specifications.*
- *If you have connected speakers in parallel, the overall impedance may be too low. It is recommended that you rearrange the speakers in series to increase the overall impedance, thus taking some of the load off the amplifier.*
- *Make sure that the amplifier has good ventilation and is not overheating. Allow good airflow underneath wherever possible. If the amplifier is in a closed rack, open up the rear panel or use a quiet fan for improved ventilation.*

### Poor Bass Performance From Full Range Speakers connected to the MPS-1

- *Make sure that your preamp does not have the bass (tone control) level turned down.*
- *Many surround preamplifiers have controls which can direct all the bass to subwoofers, or let your main*

*speakers play the full range. Make sure that the preamplifier has been correctly set. If you are not using a subwoofer, set the speaker options to "Large" where possible.*

- *Check that the speaker wires have been connected correctly: Make sure that the positive of each speaker connects to a positive output of the amplifier, and the negative of each speaker connects to a negative output. If one speaker is wired incorrectly, than it will be "out of phase" with the others, resulting in poor bass performance.*
- *If you have connected the amplifier using the XLR inputs, make sure that the XLR cables are wired correctly. If one has the hot and cold reversed (pins #2 and #3), then this will also cause a speaker to be out of phase.*

### Turn-on and turn-off thumps

- *Plug the amplifier into an un-switched AC outlet, and use the SIGNAL position of the turn on switch at the back of the amplifier. This will allow the amplifier to turn on and off silently.*

### "Hum" Noises in the Speakers

This problem is more than likely caused by a "ground loop" in your system, rather than a fault in the MPS-1. Follow these steps to isolate the main cause of the hum, there may even be more than one. Remember to turn off all components in your system, including the MPS-1, before disconnecting or connecting any cables.

- *If your preamplifier has XLR balanced outputs, use them because they offer greater immunity to noise fields.*
- *Remember to turn off all components in your system, including the amplifier, before disconnecting or connecting any cables during troubleshooting.*
- *Try to have all of your equipment on the same electrical outlet or circuit. Group all the low power components (preamp, CD player, DVD etc.) on a single outlet or power strip. This is provided that the overall current draw from your equipment does not exceed the rating of the outlet or breaker.*
- *Disconnect all cables which come from outside the room, and check if the hum goes away. This includes such connections as cable TV, satellite TV, or roof top antennas. Make sure that they are disconnected where they first enter the room, so they are making no connection to the preamplifier or the TV, or any other component. If the hum is caused by the cable TV line, then you will need a "ground loop isolator." This is an inexpensive device fitted in line with the coaxial cable feed. Contact your cable company or your Emotiva Dealer (unless purchased through AV123) for assistance.*
- *Disconnect all connections from the preamplifier to your TV, VCR or DVD.*
- *As a test, disconnect any other component which has a grounded power cord.*

*NOTE: Never remove the ground pin from any power cords (if present). This is very dangerous.*

- *If the hum persists, disconnect all the source components one at a time from the back of the preamplifier, until you identify the problem.*
- *Try moving the speaker cables away from any power cords. Try just one speaker, connecting it to each amplifier channel and see if one channel is bad.*

*• Check that the interconnect cables to the amplifier do not have any broken connections. The best way to do this is to substitute a known good connection for the suspect connection. If you reverse the cables and the problem goes away, the cable may be damaged or broken. This is possible even if you can't physically see the break as the strain for pulling on audio cables can sometimes break the wire internally.*

Ground loop isolators are available for audio lines and video devices. You can ask your Emotiva Dealer for assistance. Although this is not always an ideal solution, the grounding differences between certain home entertainment components sometimes require ground loop isolators. This is the exception rather than the rule.

### Other Probable Causes of Noise

Speaker noise may also be caused by interference or noise on your AC line. Make sure there are no large appliances sharing the line, or halogen lamps or light-dimming Triac devices.

*Try connecting your system to another AC socket on a separate line.*

*If the hum is heard from within the MPS-1 and not through the speakers, this may also be caused by interference on the AC or DC lines. The power transformers may turn this interference into an audible noise. Internal hum can be made worse by a shelf or cabinet resonating, so try moving the MPS-1 to another shelf.*

*Try moving your components further away from the TV, especially if you ever notice the screen has changed color in the area closest to the component.*

If you have very high efficiency speakers, these may tend to reveal noises which other speakers do not.

### One or more RED lights on the Front Panel are On

Each RED light indicates a fault condition for the corresponding power module. A fault condition is one or more of the following:

- *Excessive Operating Temp*
- *Excessive Current (Short Circuit)*
- *DC on the Outputs*

An excessive temperature fault can be reset by allowing amp to cool and cycling power on/off button on the front panel. Excessive current (short circuit) can be reset by removing the cause of the short and cycling power on/off button on the front panel. DC at output is a possible fault condition that is equipment related and requires technical assistance. Please contact AV123 if you have repeated problems causing the RED front panel light to illuminate that are NOT thermal or short circuit related.

# Technical Specifications

***EPM-300 Power Module***

**Rated Power Output:**

8 Ohms: 200W RMS
4 Ohms: 300W RMS
Stable to 2 Ohms

**Frequency Response:**

+/- 0.1 dB: 20 Hz-20 kHz
+/- 3 dB: 10 Hz-100 kHz

**Signal to Noise Ratio**

(Un-weighted): 100 dB

**Distortion (THD):**

(20Hz-20kHz): <0.015%
80kHz Measurement Bandwidth

**Damping Factor:**

(into 8 Ohms): >300

**Gain:**

(1.7V Sensitivity): +27dB

**Input Impedance:** >20K Ohms

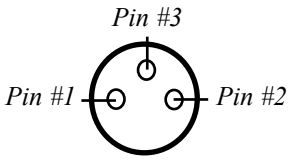
**External Trigger:** 5-24VDC

**DC Offset:** Less than 1mv
Servo controlled

**Crosstalk:**

Between ANY channels >120dB

**XLR Inputs**




Pin #1 = Ground
Pin #2 = Positive
Pin #3 = Negative

**Power Requirements (All Channels Driven)**

120VAC, 60Hz, 4200W

**Power Consumption**

(Standby) 3 Watts
(At Idle) 60 Watts

**Dimensions**

EPM-300 2"Wx6.75Hx16"D
MPS-1w/Feet 17"Wx7.75Hx19"D

**Chassis Type** 5RU chassis
Proprietary card cage

**Net Weight**

EPM-300 Module 12.125lbs. (5.5kg)
MPS-1 Chassis 33lbs. (15kg)

# Limited Warranty

Emotiva is proud to design and manufacture quality products for the home audio and home theater enthusiast. Your MPS-1 Modular Power Amplifier has been crafted to perform flawlessly for many years. As a result of this quality and craftsmanship, Emotiva offers the following warranty to owners of the MPS-1.

Emotiva Audio warrants the MPS-1 to be free of defects in materials and workmanship for a period of FIVE YEARS from the original date of purchase. The following items are excluded from, or will void this warranty:

1*) Damage to the MPS-1 caused during shipment and handling.*

*2) Damage to the MPS-1 caused by accident, misuse or abusive operation contrary to the instructions specified within this manual.*

*3) MPS-1 units that have had the serial numbers defaced, modified, or removed.*

*4) Damage to the MPS-1 resulting from a modification of, or attempted repair by any person or company not authorized by Emotiva.*

*5) Any MPS-1 unit purchased from a non-authorized dealer.*

*6) Emotiva does not assume liability for loss of use, or damage to, associated or connected equipment.*

### Service Assistance for the MPS-1

Please note that BEFORE sending your MPS-1 in for repair, you MUST call Emotiva and obtain a returned material authorization (RMA) number. Before contacting Emotiva to begin the return process, please have as detailed a description of the problem(s) you are experiencing and the conditions under which the problem(s) occur. Additionally, please be sure to check the troubleshooting guide in this manual to rule out the possibility of something simple you may have overlooked. Please remember, this is a complicated product and most instances of perceived product failure are the result of improper set up or operation. Emotiva and its dealers will help you ascertain whether you have an operational problem or product defect.

Once you have obtained the RMA number, you must print this clearly on the outside of the box so it will be possible to determine from whom the MPS-1 came once it arrives at Emotiva. Parcels arriving without an RMA number will be refused and returned freight collect.

Please send your repairs with RMA number to:

**Emotiva**

Attn.: Repair Department

106 Mission Court, Suite 101

Franklin, TN 37067

Reference - (Put your RMA number in this spot)

## Emotiva Disclosure

**Emotiva**
106 Mission Court, Suite 101
Franklin, TN 37067

Tel - (615) 771-1224
(877) EMO-TECH
Fax - (615) 771-1128
Website - www.emotiva.com

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